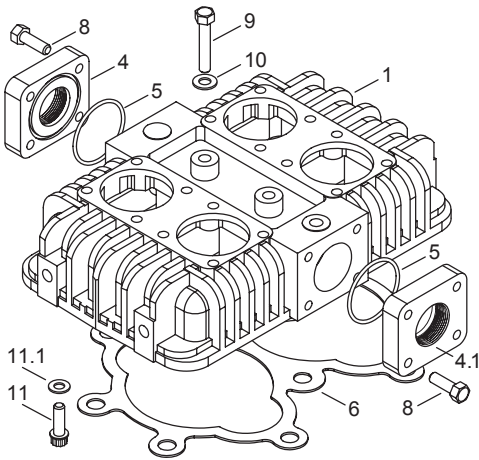
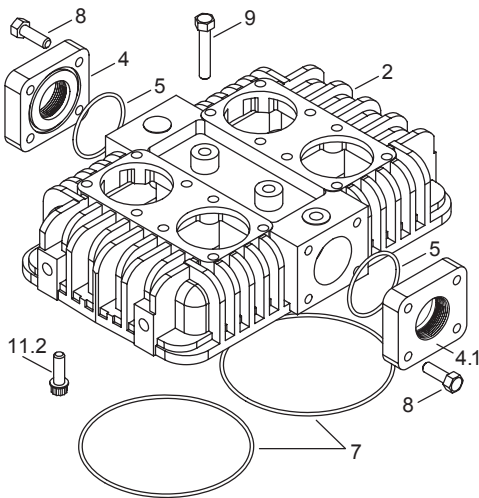


# Appendix J—691 and F691 Head and Valve Assembly Details

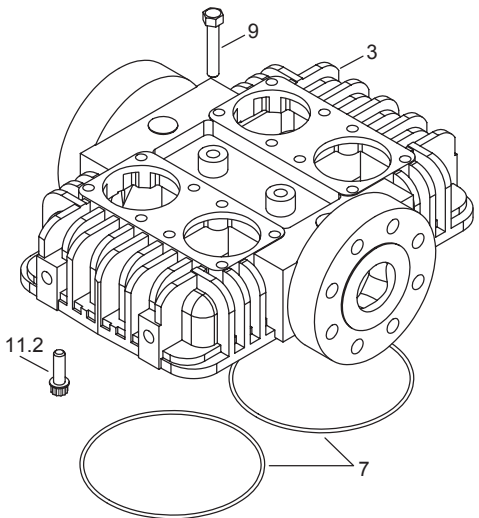
## 690 Head Assembly



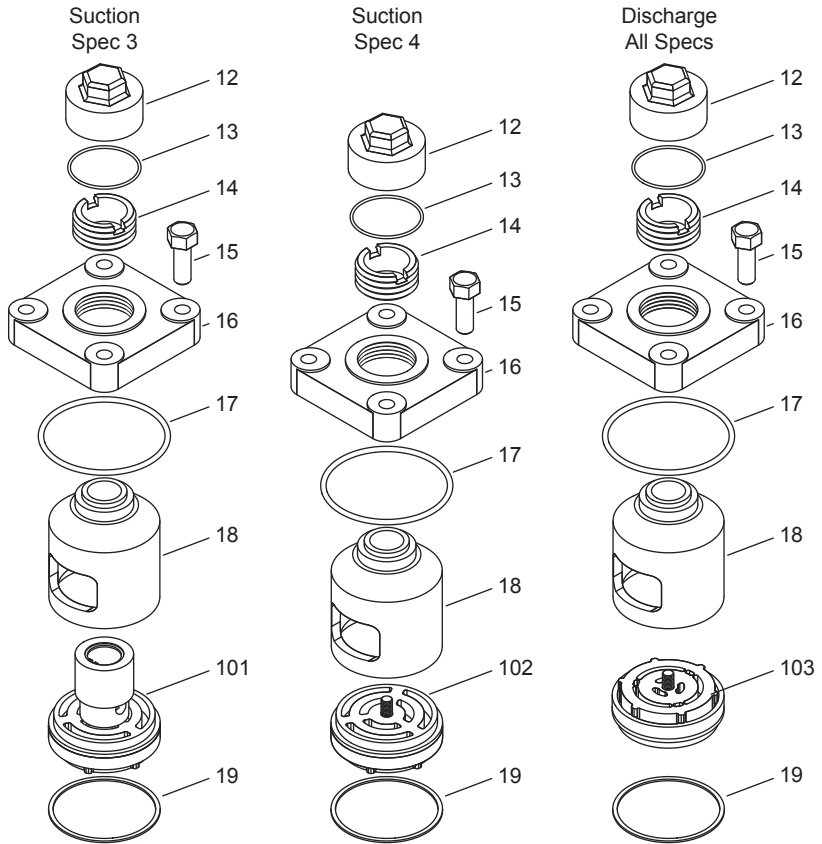
## 691 Head Assembly



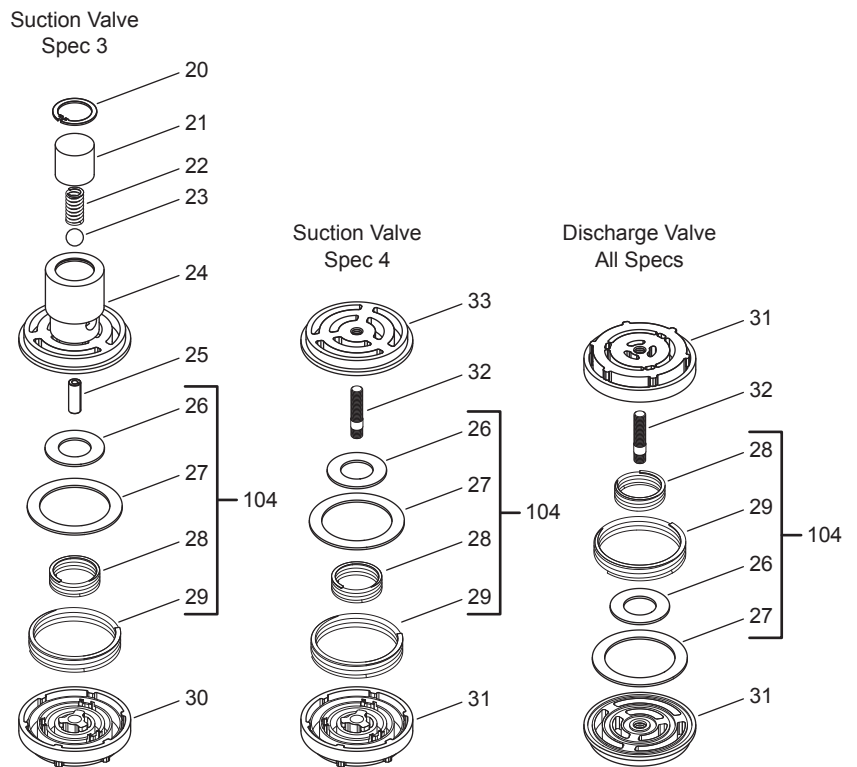
## F691 Head Assembly



## Valve Holddown Assemblies



## Valve Assemblies



# Appendix J—691 and F691 Head and Valve Assembly Details

## Head and Valve Bill of Materials

Ref No.	Part No.	Description
1.	1743	Head (690)
2.	3458 <sup>d</sup>	Head (691)
3.	4299	F691 head
4.	2144-2	Flange (suction) 2" NPT
	2144-2S <sup>c</sup>	Flange 2" weld
4.1	2144-1.5	Flange (discharge) 1-1/2" NPT
	2144-1.5S <sup>c</sup>	Flange 1-1/2" Weld
5.	2-231_ <sup>a</sup>	O-ring
6.	1744 <sup>b</sup>	Head gasket (690)
	1744-1 <sup>b,c</sup>	Head gasket grafoil
7.	2-261_ <sup>a</sup>	O-ring for head (691)
8.	7001-043 NC150A	Bolt, 7/16-14 x 1-1/2" hex head
9.	2136	Center head bolt
10.	1625	Center head bolt gasket (aluminum)
	1625-1 <sup>c</sup>	Center head bolt gasket (copper)
	1625-2 <sup>c</sup>	Center head bolt gasket (iron-lead)
11.	7005-043 NC125A	Bolt, 7/16-14 x 1-1/4" ferry head
11.1	7006-043A	Reg. lockwasher 7/16"
11.2	7005-050 NC150A	Bolt, 1/2-13 x 1-1/2" ferry head
12.	2714	Valve cap
	2714-1	Valve cap, grooved for O-ring
13.	2-031_ <sup>a</sup>	O-ring for valve cap
	2716 <sup>c</sup>	Gasket (aluminum) for valve cap
	2716-1 <sup>c</sup>	Gasket (copper) for valve cap
	2716-2 <sup>c</sup>	Gasket (iron) for valve cap
14.	2715	Holddown screw
15.	7001-043 NC137A	Bolt, 7/16-14 x 1-3/8" hex head
16.	1764	Valve cover plate
17.	2-235_ <sup>a</sup>	O-ring (cover plate)
18.	2797	Valve cage
19.	2114	Valve gasket (aluminum)
	2114-1 <sup>c</sup>	Valve gasket (copper)
	2114-2 <sup>c</sup>	Valve gasket (iron)
20.	5000-77	Retainer ring
21.	3977	Suction valve relief housing (spec 3)
22.	1411	Spring
23.	1410	Relief ball
24.	3948	Valve seat (spec. 3)
25.	2534-1	Suction valve post (spec 3)
26.	3872	Inner valve plate
27.	3871	Outer valve plate
28.	3929	Inner valve spring
29.	3928	Outer valve spring
30.	3949	Valve bumper (spec. 3)
31.	3857	Valve bumper
32.	3920	Valve stud
33.	3856	Valve seat

Ref No.	Valve Assembly No.	Assembly Name
101.	3948-X	Suction valve assembly (spec. 3) (includes valve gasket)
	3948-X1 <sup>c</sup>	Same as above but with copper gasket
	3948-X2 <sup>c</sup>	Same as above but with iron-lead gasket
102.	3856-X	Suction valve assembly (includes valve gasket)
	3856-X1 <sup>c</sup>	Same as above but with copper gasket
	2255-X2 <sup>c</sup>	Same as above but with iron-lead gasket
103.	3857-X	Discharge valve assembly (includes valve gasket)
	3857-X1 <sup>c</sup>	Same as above but with copper gasket
	3857-X2 <sup>c</sup>	Same as above but with iron-lead gasket
104.	3146-X1	Valve repair kit (suction & discharge)

### Other Assemblies

Head Assembly Number	Models	Valve Specification
1743-X	690	3
3458-X	691	3

### O-ring Code

A	Buna-N
B	Neoprene <sup>®e</sup>

<sup>a</sup> \_ denotes O-ring code. See O-ring chart above for details.

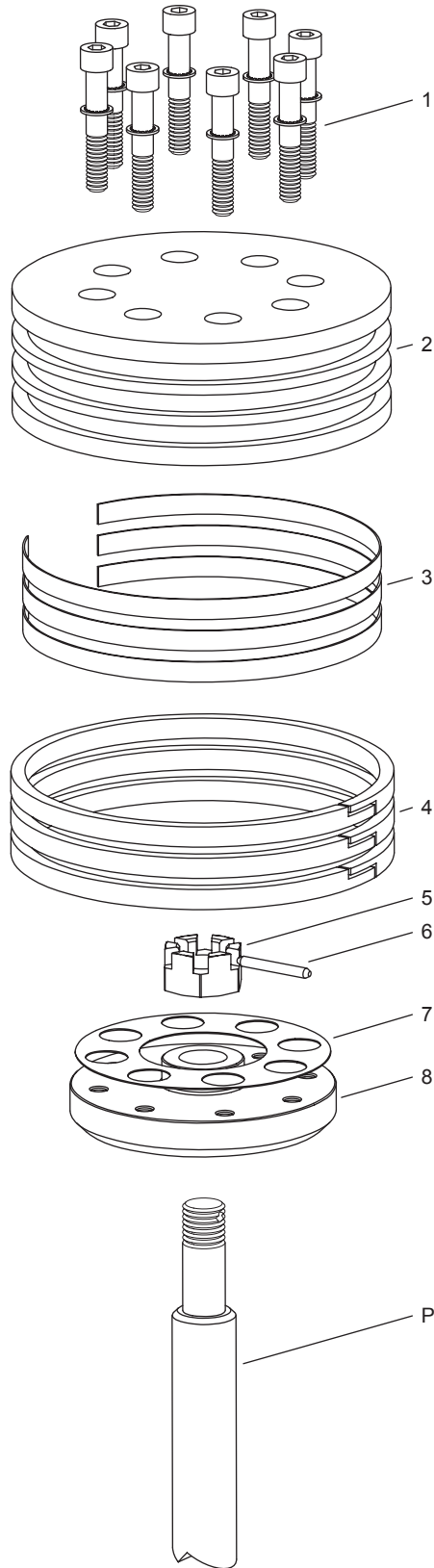
<sup>b</sup> Not included in head assembly.

<sup>c</sup> Optional.

<sup>d</sup> S/N NQ51455 and later. Earlier models use gasket #2177.

<sup>e</sup> Registered trademark of the DuPont company.

# Appendix J—691 and F691 Piston Assembly Details



**Piston Assembly Number 1987-X1 Bill of Materials**  
**Piston Diameter 4.5" (11.43 cm)**

Ref No.	Part No.	Description	Qty
1.	7002-025TP125A	Screw, socket head	8
	7207-025A	Lock washer	8
2.	1987	Head, iron	1
3.	1740	Ring expander	3
4.	1739	Piston ring	3
5.	1482	Locknut	1
6.	1483	Lock pin	1
7.	1735	Shim washer, thick	As Req.
	1735-1	Shim washer, thin	
8.	1986	Piston platform	1

Model	Minimum	Maximum
690	0.000" (0.00 mm)	0.012" (0.30 mm)
691	0.015" (0.38 mm)	0.027" (0.68 mm)

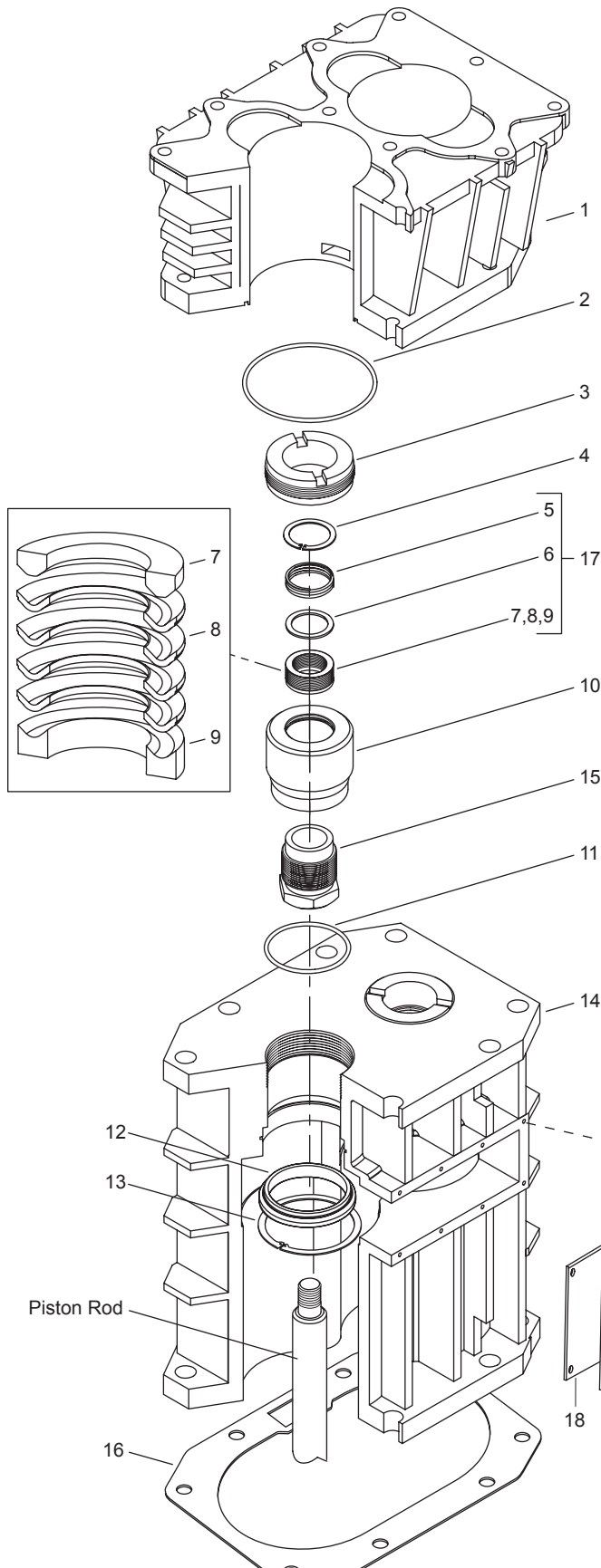
<sup>a</sup> The distance from the bottom of the head to the top of the piston.

**CAUTION:** Always Relieve Pressure In The Unit Before Attempting Any Repairs.

# Appendix J—691 and F691 Packing Assembly Details

## Packing Assembly Bill of Materials

Ref No.	Part No.	Description	Qty
1.	3457	Cylinder	1
2.	2-247_a	O-ring for cylinder	2
3.	1749	Cartridge holddown screw	2
4.	5000-175	Retainer ring	2
5.	1731	Packing spring	2
6.	1728	Packing washer	2
7.	1724	Male packing ring	2
8.	1725	Packing ring	4
9.	1723	Female packing ring	2
10.	2407	Packing box cartridge	2
11.	2-233_a	O-ring (packing cartridge)	2
12.	1748	Cartridge plate	2
13.	5000-350	Retainer ring	2
14.	2405	Crosshead guide	1
15.	1722	Adjusting screw	2
16.	1761	Crankcase gasket	1
17.	1725-2X	Packing set	2
18.	1760	Inspection plate gas-ket	1
19.	1721	Inspection plate	1
20.	7003-025NC037E	Screw-1/4-20x3/8"	4
not shown	1192	Locking device for adj. screw	4
not shown	2893	Locking device cartridge holddown screw	



## Other Assemblies

Assembly Number	Assembly Name
1717-X1	Crosshead assembly "P" style
2405-X	Crosshead guide assembly with 1748 (2), 2405, 5000-350 (2)
3544-X4	Crosshead assembly "M" style

### O-ring Code

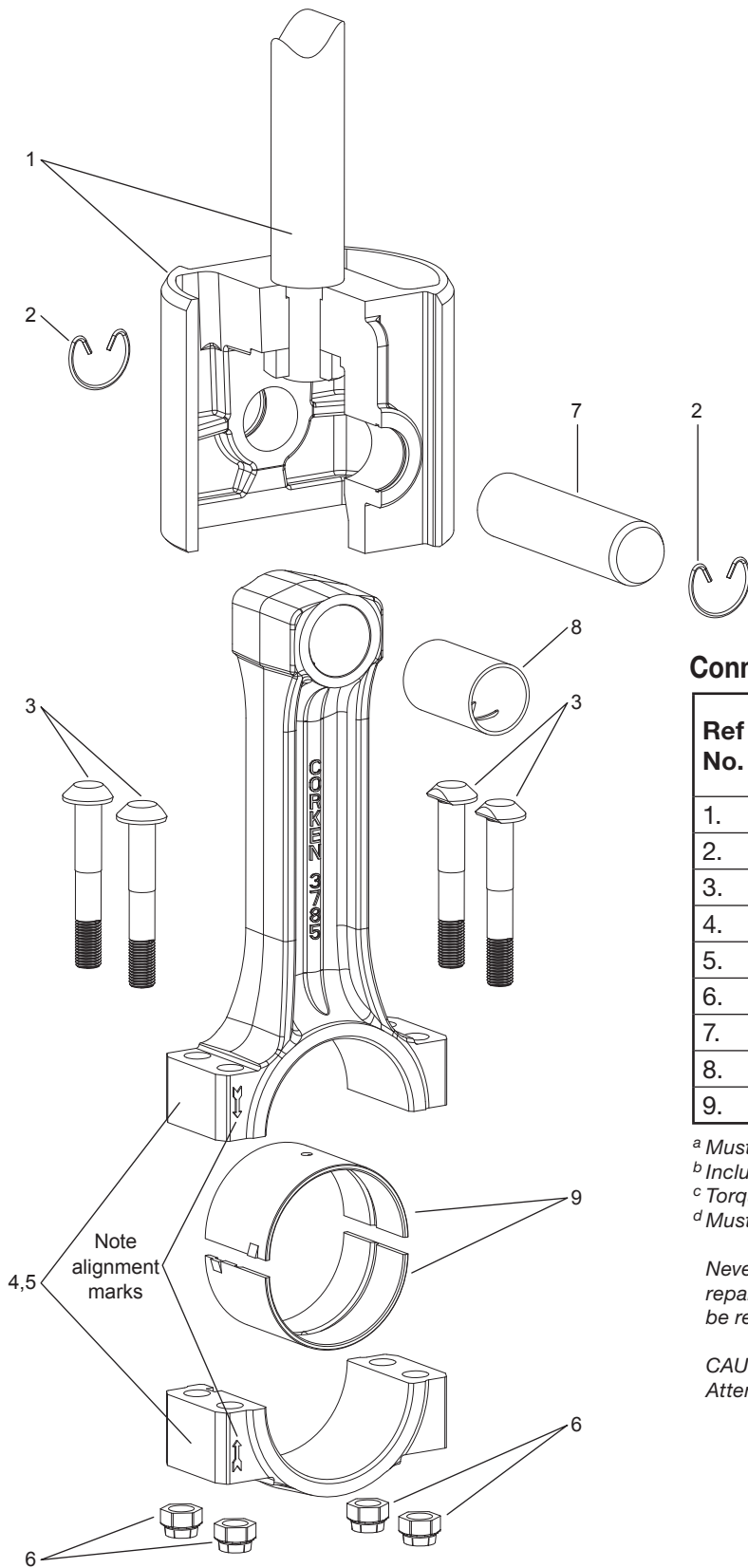
A	Buna-N
B	Neoprene <sup>®b</sup>

<sup>a</sup> \_ denotes O-ring code. See O-ring chart above for details.

<sup>b</sup> Registered trademark of the DuPont company.

**CAUTION:** Always Relieve Pressure In The Unit Before Attempting Any Repairs.

# Appendix J—691 and F691 Connecting Rod Assembly Details



## Connecting Rod Assembly Bill of Materials

Ref No.	Part Number		Description
	Spec. K,P Only	Spec. M Only	
1.	1717-X1	3544-X4	Crosshead assy.
2.	1498	3590	Retainer ring
3.	1718	3540	Wrist pin
4.	1495-X <sup>a,b</sup>	3541-X <sup>b,d</sup>	Wrist pin bushing
5.	1726 <sup>b</sup>	1726 <sup>b</sup>	Bolt
6.	1720-X	3785-X1	Conn. rod assy.
7.	1720 <sup>b</sup>	3785 <sup>b</sup>	Connecting rod
8.	1719 <sup>b</sup>	3542 <sup>b</sup>	Conn. rod bearing
9.	1727 <sup>b,c</sup>	1727 <sup>b,c</sup>	Nut

<sup>a</sup> Must be rebored after replacing (0.8754/0.8751 dia.)

<sup>b</sup> Included with connecting rod assembly

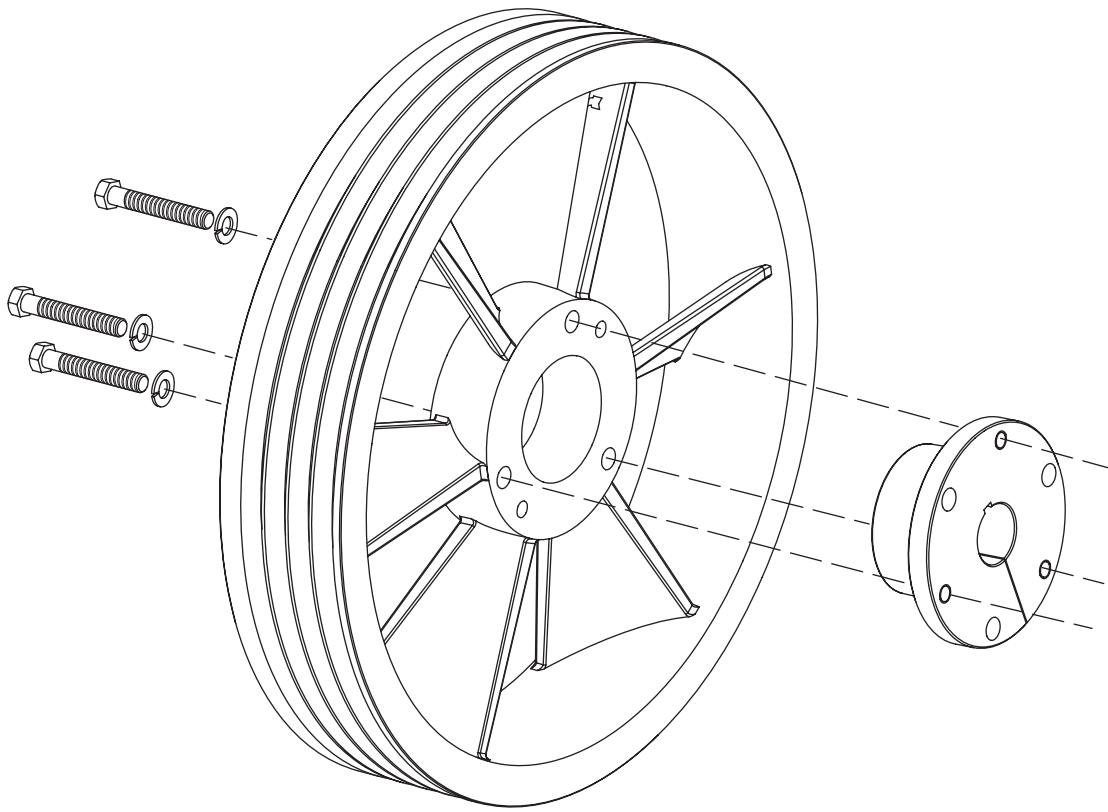
<sup>c</sup> Torque connecting rod nut to 40 ft. lbs.

<sup>d</sup> Must be rebored after replacing (1.1256/1.252 dia.)

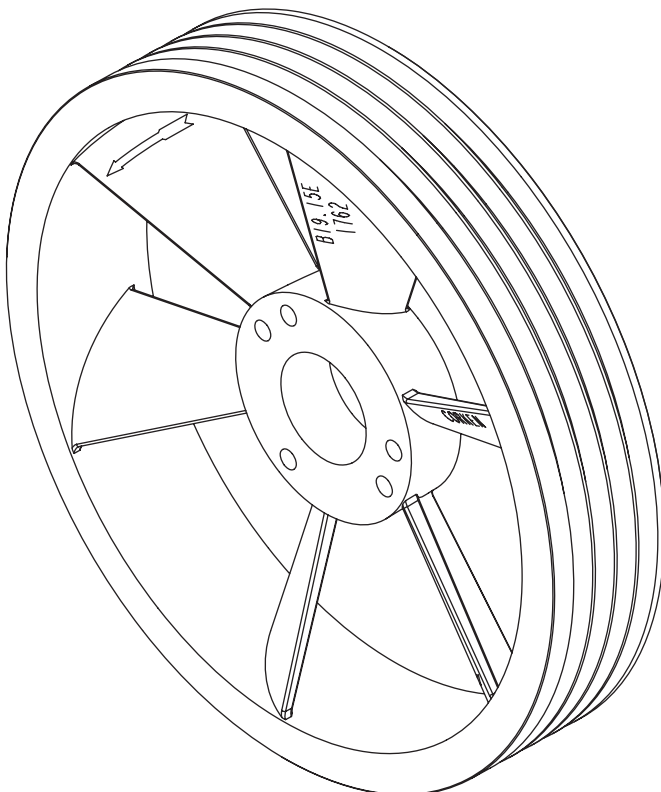
*Never attempt to separate the piston rod and crosshead. When repair becomes necessary, the entire crosshead assembly must be replaced.*

**CAUTION:** Always Relieve Pressure In The Unit Before Attempting Any Repairs.

# Appendix J—691 and F691 Flywheel Assembly Details



Back Side



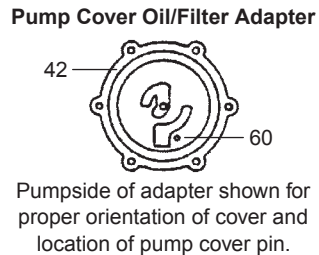
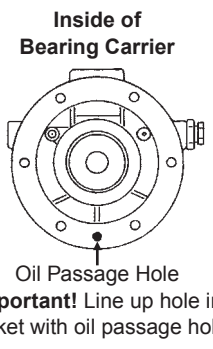
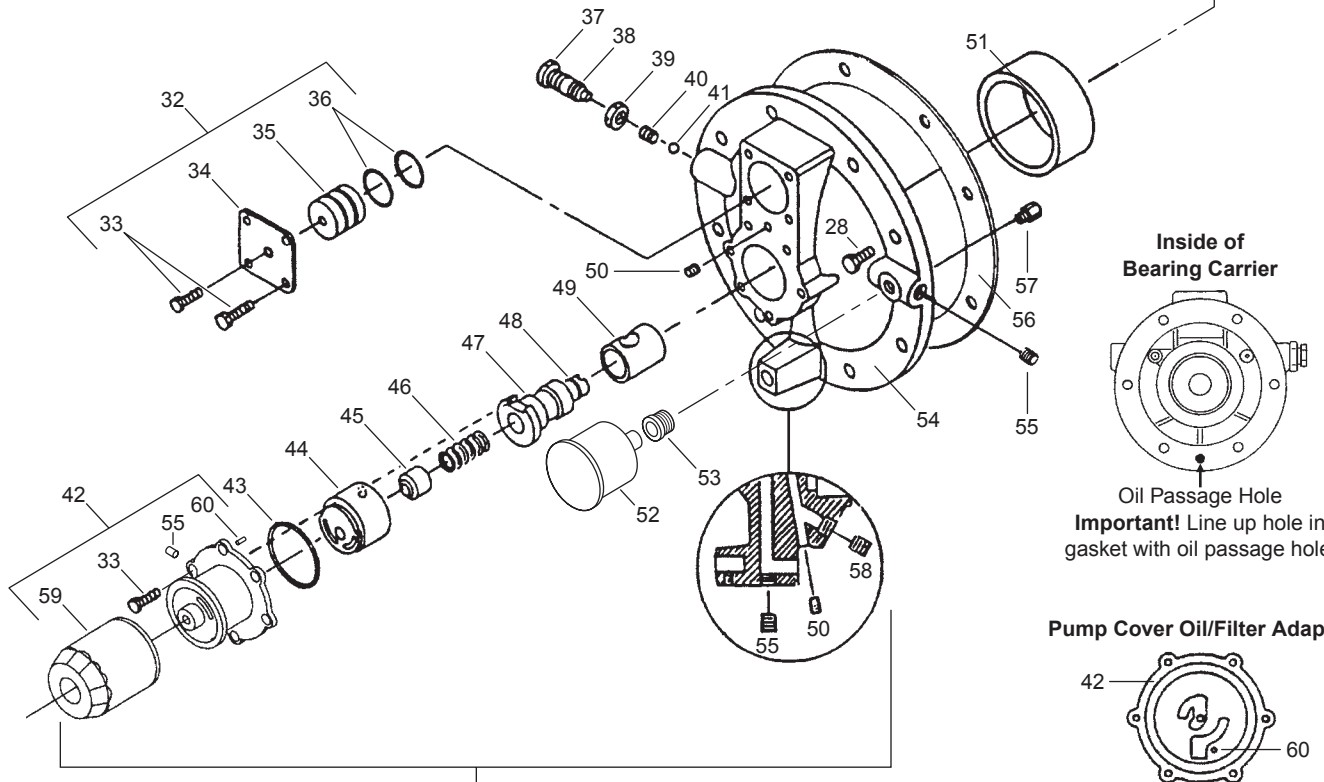
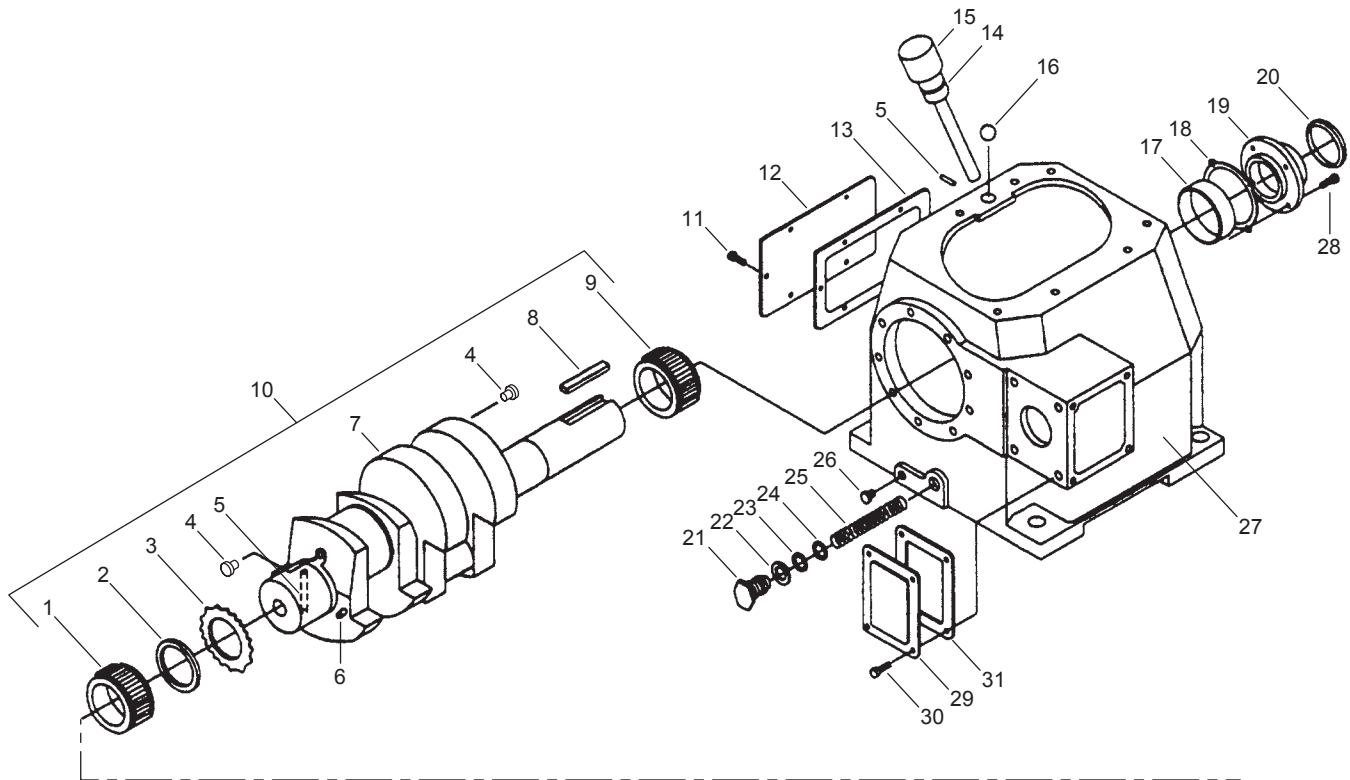
Front Side

## Flywheel Assembly Bill of Materials

Assembly Number	Assembly Name
1762-X	Flywheel assembly (flywheel, hub, and three bolts)
1762	Flywheel: 19.5" O.D., 4 groove
H E-2.125	Hub with three bolts and lockwashers



# Appendix J—691 and F691 Crankcase Assembly Details



61  
(Includes all parts shown except #52 and #53)

# Appendix J—691 and F691 Crankcase Assembly Details

## Crankcase Assembly Bill of Materials

Ref No.	Part No.	Description
1.	1737	Bearing cone
2.	3638	Spacer
3.	3635	Drive sprocket
4.	1284	Crankshaft orifice
5.	2135	Drive pin
6.	2933	Link pin
7.	3786	Crankshaft
8.	3503	Flywheel key
9.	3580	Bearing cone
10.	3786-X1	Crankshaft assembly
11.	7001-031NC075A	Bolt, 5/16 - 18 x 3/4" hex head
12.	2122	Inspection cover
13.	2123	Gasket, inspection cover
14.	2-210 <sup>d</sup>	O-ring
15.	3225-X1	Oil bayonet assembly (w/O-ring)
16.	2126	Breather ball
17.	3579	Bearing cup
18.	3589	Bearing adjustment shim (.005")
	3589-1	Bearing adjustment shim (.007")
	3589-2	Bearing adjustment shim (.020")
19.	3539	Bearing cover
20.	3526	Oil seal
21.	1280	Filter screw
22.	1281	Gasket, filter
23.	2-116 <sup>d</sup>	O-ring
24.	1276	Washer
25.	1275	Oil filter screen
26.	3443	Pipe plug, 1/2" NPT steel
27.	3221	Crankcase
28.	7001-037NC100A	Bolt, 3/8 - 16 x 1" hex head Gr. 5
29.	3875	Access cover
30.	7003-025NC037E	Screw, 1/4 - 20 x 3/8"
31.	3874	Gasket, access cover
32.	1515-X	Closure cap assembly
33.	7001-025NC050A	Bolt, 1/4 - 20 x 1/2" hex head
34.	1515	Closure cap
35.	1516	Closure body
36.	2-218 <sup>d</sup>	O-ring
37.	1290	Relief valve adjusting screw
38.	2-011 <sup>d</sup>	O-ring
39.	1291	Adjusting screw locknut
40.	1292	Relief valve spring
41.	1293	Relief valve ball
42.	4222-X <sup>c</sup>	Oil filter adapter assembly (w/pin)
43.	2-228 <sup>d</sup>	O-ring
44.	2849-1X <sup>c</sup>	Oil pump assembly
45.	2851	Spring guide
46.	2852	Oil pump spring
47.	3219	Pump shaft adapter

Ref No.	Part No.	Description
48.	2-112 <sup>d</sup>	O-ring
49.	2805-X <sup>d</sup>	Pump shaft bushing
50.	1629	Pipe plug, 1/16 NPT fl. seal
51.	1736	Bearing cup
52.	1302	Oil pressure gauge
53.	1044	Bushing, 1/8 x 1/4 NPT
54.	3220-2	Bearing carrier
55.	3289	Pipe plug, 1/4 NPT fl. seal
56.	2131	Bearing carrier gasket
57.	2961-X	Air release valve assembly
58.	2590	Pipe plug, 1/8 NPT fl. Seal
59.	4225	Filter
60.	2798	Pump cover pin (included w/4222-X)
61.	3220-2X	Bearing carrier assembly M3 style

## Additional Assembly

Assembly Number	Assembly Name
3221-X1 <sup>a</sup>	Crankcase assembly (M3, 4, 8, 9) without lubrication

O-ring Code	
A	Buna-N
B	Neoprene <sup>®e</sup>

<sup>a</sup> Not shown

<sup>b</sup> Must be rebored and honed after replacing (0.876"/0.875" diameter)

<sup>c</sup> Caution: To avoid damage during assembly, refer to installation Instruction Manual IE400.

<sup>d</sup> <sub>denotes</sub> O-ring code. See O-ring chart above for details.

<sup>e</sup> Registered trademark of the DuPont company.

**CAUTION:** Always Relieve Pressure In The Unit Before Attempting Any Repairs.